

observed in busulfan metabolism, individualized dosage adjustments should be made based on TDM.

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### RETROSPECTIVE COMPARISON OF PHENYTOIN AND LEVETIRACETAM AS SEIZURE PROPHYLAXIS WITH HIGH DOSE BUSULFAN DURING ALLOGENEIC STEM CELL TRANSPLANT

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**Background:** Busulfan is an alkylating agent commonly used in preparative regimens for hematopoietic stem cell transplant (HSCT). Early clinical trials, prior to the use of seizure prophylaxis, revealed a high degree of neurotoxicity associated with myeloablative doses of this agent. Phenytoin has been widely used as seizure prophylaxis with busulfan. However, potential concerns with its use include the length of time to achieve a therapeutic steady state, risk of hepatotoxicity, and drug-drug interactions with busulfan and other agents used during conditioning. Alternatively, levetiracetam is highly bioavailable in both oral and intravenous forms, with a short half life it rapidly achieves steady state and is renally eliminated with limited drug interactions. The main objective of this study was to compare the incidence of seizures with phenytoin and levetiracetam. Secondary objectives were to compare VOD incidence, assess busulfan and phenytoin pharmacokinetics, and toxicity of the prophylactic agents.

**Methods:** All patients  $\geq 18$  years of age receiving busulfan in a preparative regimen prior to HSCT between 6/1/08-6/30/09 were included in this retrospective analysis. Patient information was collected from the pharmacy database and electronic medical records. Data included age, disease, preparative regimen, type of transplant, busulfan dose, busulfan AUC, survival status, incidence of relapse, and hepatic panels.

**Results:** 54 patients were included in this analysis with 22 receiving phenytoin and 32 receiving levetiracetam as seizure prophylaxis. Phenytoin was dosed with a 1000 mg loading dose and 300 mg daily maintenance dose. Levetiracetam was dosed at 500 mg twice daily. Of the 54 patients there were no reports of seizures in either group. There were also no reports of VOD in either group. Elevation in liver enzymes occurred in 3 (9%) patients who received levetiracetam compared to 7 (32%) patients who received phenytoin. A therapeutic steady state of phenytoin was achieved in 12 (55%) patients. Twenty patients (63%) receiving levetiracetam needed busulfan dose adjustments based on pharmacokinetic analysis versus 11 (50%) receiving phenytoin. Rates of relapse were similar in both groups.

**Conclusion:** Levetiracetam is a safe and effective alternative to phenytoin for busulfan seizure prophylaxis. With low hepatotoxicity, no pharmacokinetic monitoring, and limited drug-drug interactions it is an attractive option in the HSCT population.

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### WEIGHT-BASED DOSING OF VALGANCICLOVIR IN PEDIATRIC HSCT RECIPIENTS

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**Background:** IV ganciclovir is the standard therapy to prevent CMV infection in HSCT recipients at Texas Children's Hospital. In 2001, the FDA approved valganciclovir (VGC) for treatment of CMV retinitis in AIDS patients. This oral preparation increased the oral bioavailability of ganciclovir from 5% to 60% and demonstrated a well established safety profile. The oral route of administration avoids the need for a central line and markedly decreases the added costs associated with IV therapy. Unfortunately, data as to the efficacy of VGC to prevent CMV infection in pediatric HSCT recipients is limited. In 2004, our institution reported positive experience in liver transplant patients using 15–18 mg/kg/dose. Encouraged by this result, the HSCT program began using a similar dosing strategy for patients unable to receive IV ganciclovir. This report evaluates the efficacy

and safety of weight-based dosing of VGC for CMV prophylaxis in pediatric HSCT recipients.

**Methods:** Thus far, we have evaluated thirty-two patients (2–20 years old) for this retrospective study. The inclusion criteria were: allogeneic HSCT recipients, CMV seropositive (donor and/or recipient) prior to transplantation, received VGC  $\geq 7$  days. Exclusion criteria were: ANC  $< 500$  and renal dysfunction. Efficacy was defined as no incidence of CMV reactivation during therapy based upon the development of CMV antigenemia or the presence of CMV by quantitative PCR (qPCR). ANC served as a marker for safety. The dosing was as follows: 15–18 mg/kg/dose (max 900 mg) twice daily for 14 days, then once daily thereafter.

**Results:** The duration of therapy ranged 7 days to 2 years. The average dose for patients  $< 60$  kg was 15.2 mg/kg/dose (8.2–22.5 mg/kg/dose.) Patients  $\geq 60$  kg received a maximum 900 mg per dose. CMV reactivation was not observed in 30 of 32 patients. Therapy was discontinued in 4 patients due to declining ANC. Four patients required filgrastim intermittently to maintain ANC  $> 500$ . Effect on ANC cannot be assessed for one patient due to concurrent treatment with hydroxyurea. Most importantly, no patient developed CMV pneumonitis.

**Conclusion:** Our data demonstrate that valganciclovir 15–18 mg/kg/dose is effective and safe as a CMV prophylactic regimen in pediatric HSCT patients. However, frequent monitoring, including CMV qPCR and hematologic profile, is necessary with VGC therapy.

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### USE OF HEPATITIS B IMMUNE GLOBULIN AND ADEFOVIR IN A CORD BLOOD TRANSPLANT RECIPIENT

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A 52-year old female with acute myelogenous leukemia in remission presented for a matched unrelated donor hematopoietic stem cell transplant, testing negative for Hepatitis B surface antigen. The recipient underwent HPCT conditioning using the Slavin regimen. The patient's human leukocyte antigen (HLA) typing matched with a cord blood donation from a twin birth where the mother was found to be Hepatitis B surface antigen positive; the HBsAg status of the twin donors was unknown at the time of hematopoietic stem cell transplantation.

As a precaution against the recipient developing a Hepatitis B infection, Hepatitis B Immune Globulin and Adefovir was administered as chemoprophylaxis. Dosing of Hepatitis B Immune Globulin was derived from the liver transplant literature. Hepatitis B Immune Globulin 20,000 international units was given intravenously on transplant day zero and repeated on transplant days 1 through 7. Additional doses were scheduled for every two weeks to begin on transplant day +14. Adefovir 10 mg was ordered to be administered by mouth daily beginning on transplant day negative 2.

On transplant day +19 the HBsAg status of the twin donors was discovered to be negative. Hepatitis B chemoprophylaxis was discontinued at that time with no additional doses administered to the recipient.

Hepatitis B Immune Globulin is used in the liver transplantation population to prevent hepatitis B virus recurrence in HBsAg-positive recipients after transplantation. Adefovir is used to treat chronic hepatitis B infections.

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### DECLINE IN BONE MINERAL DENSITY IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION: IMPACT OF MYELOABLATIVE VERSUS REDUCED INTENSITY CONDITIONING REGIMENS

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**Background:** Compared with myeloablative (MA) regimens, reduced intensity conditioning (RIC) regimens have shown a lower incidence of some complications (veno-occlusive disease, pre-engraftment infections, bronchiolitis obliterans); however, the incidence is similar for others (chronic kidney disease, hypothyroidism). The incidence of osteoporosis and osteopenia has not been compared.